

II. Amendments to the Drawings

In this response, Figs. 1-3 have been labeled as “prior art” in that they disclose conventional arrangements.

III. REMARKS

A. IDS

The Examiner is respectfully reminded that the IDS filed on September 20, 2011 has not yet been acknowledged. This is requested in any subsequent action taken.

B. Claim Amendments/Status

In this response, claim 4 has been amended to clarify the recited subject matter. This amendment merely rephrases the pending language to improve the clarity of the language with which the claimed subject matter is expressed. The present amendment does not change the scope of the claims and adds no new matter to the above-captioned application. There are no grounds that would require further search or reconsideration.

C. The Invention

The present invention pertains broadly to a backlight device, such as may be used to illuminate a liquid crystal display device. In accordance with an embodiment of the present invention, a backlight device is provided that includes features recited by independent claim 4. Various other embodiments, in accordance with the present invention, are recited by the dependent claims.

An advantage provided by the various embodiments of the present invention is that a backlight device is provided that has a decrease in darkness occurring between light sources and of hotspots and bright line occurring in the region of light input, which realizes less unevenness and improved uniformity of luminance.

In addition, such a structured face formed on the reflector may provide further advantageous effects: (1) because a certain distance may be provided from the reflecting surface of the reflector to the exit surface of the light guide plate, the displacement of the light deflected by the reflector increases and thus suppressing the unevenness of light; and (2) because the reflector does not require the same degree of accuracy as the light guide plate, the reflector may be prepared with comparatively low cost.

D. The Rejections

Claims 4-6 and 9-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art, hereinafter referred to as AAPA, in view of Ohkawa (US 2002/0036729).

E. Traverse

The above rejection is respectfully traversed.

Neither the AAPA nor the Ohkawa reference discloses or suggests “a reflector that comprises a structured face that includes an iteration of prism elements of trapezoidal section, a crest line direction of the prism elements being disposed orthogonally to the entry face of the light guide plate.” (emphasis added). Moreover, the combination of references also does not disclose: “wherein the reflector is disposed at the lower face of the light guide plate and reflects light from the light guide plate at the structured face.” The cited references therefore fail to produce a prima facie showing of obviousness since, even if combined several of the claimed elements are not present in the combination.

More specifically, regarding independent claim 4, the Examiner asserts that the AAPA teaches: a backlight device (LCD device exhibited in figs. 1-2) comprising:

- (a) a light guide plate (1 of figs. 1-2) that propagates, reflects and diffuses light, disposed at a rear surface side of a display device (paragraph 3-4 and 5-8, figs. 1-2), wherein the light guide plate comprises:
 - i. an entry face (5 of fig 1-2) that light enters at one side of the light guide plate (paragraph 4, fig 1-2);
 - ii. an exit face (3 of fig 1-2) disposed on a side of the light guide plate adjacent to a liquid crystal display device (paragraph 5, fig 1-2); and
 - iii. a lower face (9 of fig 2) disposed opposing the side of the light guide plate nearest to the liquid crystal display device (paragraph 5, fig 2);
- (b) a light source (2 of fig 1-2) disposed at least one end of the light guide plate (paragraph 3 and 5, fig 1-2); and
- (c) a reflector (10 of fig 2) that comprises a structured face, wherein the reflector is disposed at the lower face of the light guide plate and reflects light from the light guide plate (paragraph 8, fig 2).

The Examiner's analysis of the AAPA is flawed. That is to say, 9 of Fig.2 is the bottom of the liquid crystal display device not the lower face of the light guide plate; and reflector 10 of Fig. 2 does not have a structured face and is disclosed as being a conventional reflector such as a pure mirror.

The Examiner admits that the AAPA fails to teach that the structured face includes an iteration of prism elements of trapezoidal section, wherein a crest line direction of the prism elements is disposed orthogonal to the entry face of the light guide plate. To overcome this admitted shortcoming, the Examiner turns to Ohkawa as disclosing a guide plate, surface light source device and liquid crystal display.

In particular, the Examiner asserts that Ohkawa teaches a structured face that includes an iteration of prism elements of trapezoidal section (paragraph 89, 97, and 96, figs. 4a-5); wherein a crest line direction of the prism elements is disposed orthogonal to the entry face of the light guide plate (paragraph 97, fig 5).

However, the Examiner's interpretation of the Ohkawa reference is incorrect for the following reasons.

Ohkawa discloses microreflectors 90. However, the shape of elements 90 is not trapezoidal as claimed. Element 90 is said to have four faces 91-94. "The faces 91-94 are formed as to be inclined with respect to a general plane representing the back face 34, respectively." Ohkawa, p. 6, [0114]. Thus, they cannot be trapezoidal, since a trapezoid is "a quadrilateral having two parallel sides." American Heritage Dictionary, p.1439 (Houghton, Mifflin Co., Boston, 1993) (copy attached as Exhibit A). Furthermore, it is clear from all of the Figs. of Ohkawa, that microreflectors 90 do not have two parallel sides, and are not trapezoidal in cross section.

In addition, the micro reflectors of Ohkawa are provided in a back face of a guide plate (abstract lines 1-2), not in a structured face opposite a reflector as claimed. By definition, elements 90 are reflective themselves, and are not part of a structured face to which light is reflected from a reflector disposed on a lower face as claimed.

The manner in which these microreflectors are arranged in Figs. 9-12, for example, would not lead the reader of ordinary skill to consider the modification of the AAPA in the manner wherein the saw tooth-shaped reflective elements 6 of the AAPA would be re-

shaped and rendered trapezoidal with the crest lines arranged orthogonally with respect to the entry face of the guide plate. Even if such a modification would be carried out, the structure would be on a reflective lower face 6, and not in a structured face to which light is reflected as claimed. Fig. 5 of Ohkawa clearly shows that the elongate triangular prism-shaped elements are on the upper emission face of the guide plate while the microreflectors 90 are on the lower surface of the guide plate. Thus, Ohkawa clearly teaches away from putting its microreflectors on a structured face away from the reflector, as would be required to make the combination asserted by the Examiner. Moreover, if reflectors 6 were modified to be trapezoidal (for which there is absolutely no suggestion in the art) the orientation of the ridge line would not be orthogonal to the entry face as claimed.

A prima facie case of obviousness requires a showing that the scope and content of the prior art teaches each and every element of the claimed invention, and that the prior art provides some teaching, suggestion or motivation, or other legitimate reason, for combining the references in the manner claimed. KSR International Co. v. Teleflex Inc., 127 S.Ct. 1727, 1739-41 (2007); In re Oetiker, 24 U.S.P.Q.2d 1443 (Fed. Cir. 1992). In this case, the Examiner has not established a prima facie case of obviousness against the claims of the above-captioned application because the combination of the AAPA and the Ohkawa reference fails to teach, or even suggest, each and every claimed limitation, arranged as in the claims.

Specifically, at least the following two elements are completely absent from the combination of asserted references:

(a) “a reflector that comprises a structured face that includes an iteration of prism elements of trapezoidal section, a crest line direction of the prism elements being disposed orthogonally to the entry face of the light guide plate,” and

(b)” wherein the reflector is disposed at the lower face of the light guide plate and reflects light from the light guide plate at the structured face.”

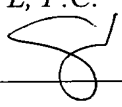
For at least the above reasons, the Examiner has not established a prima facie case of obviousness against claims pending in the above-captioned application.

IV. Conclusion

The Examiner has not established a prima facie case of obviousness against claims 4-6 and 9-21 which are therefore asserted to be in condition for allowance. A notice of allowance is earnestly solicited.

Questions are welcomed by the below-signed attorney for Applicants.

Respectfully submitted,
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